tivated influenza vaccine administered in healthy health care workers did not result in potential adverse events in this study population. However, it remains important to assess the clinical efficacy of influenza vaccine early in the influenza season.

doi:10.1016/j.ijid.2008.05.350

19.004

Sanitary and Socioeconomic Impact of the Virosomal Subunit Influenza Vaccine in Children Without Risk Factors. A Prospective Cohort Study. La Palma-Fuerteventura 2005—2006

A.J. Garcia Rojas*, D. Nunez Gallo, B. Galvan Molina, T. Perez Ortega, M. Naranjo Baez

Public Health Service, Las Palmas de Gran Canaria, Spain, Public Health Service, Santa Cruz de Tenerife, Spain, Public Health Service, Fuerteventura, Spain

Background: We present a study thas has as objective to determinate the sanitary and socioeconomic impact in vaccinated schoolchildren and their families with the virosomal subunit influenza vaccine, administered to children without risk, between 3 and 14 years old

*Methods:*We made a prospective cohort study during the influenza season 2005—2006. The studied was carried out in Breña Alta, town in La Palma Island, and in Corralejo in Fuerteventura Island. Tha vaccine was administered in some shools with voluntary character and with parents approval. In parallel, and also with the parents approval the were taken another children with similar characteristics of other schools of the same towns as control cohort. We set up in both cases inclusion an exclusion criterions. To built on the Database, and to make up the statistical analysis, we used the SAS Sistem

Results: In total we recruit 329 children, 216 vaccinated (66%, and 113 no vaccinated (34%). In both cohorts, the percentages male and female was very similar (55% of females in vaccination cohort and 56% in no vaccinated). The medium age in the vaccinated cohort was 7,12 years more less 0,45, and in the no vaccinated cohort 7,32 years more less 0,57. As for the observed effectivities, we remarked significative statistical differences in the number of fever breathing processes between vaccinated children (40%) and no vaccinated (73% $p < 0{,}00001$). The remarked differences come about in the lower aged children (between 3 and 8 years old, $p < 0{,}001$). Between 9 an 14 years old, it was not appreciated. Once the fever breathing power came over the were no difference in lasting between the two cohorts. The consuption of sanitary resorts was similar in both cases, but as in vaccinated cohort there were less fever cases, overall vaccinated cohort had less sanitary resorts consumption. The secondary effects in relation with the vaccine administration were scarce (27%), being the pain and discomfort the most frecuently

*Conclusion:*We observed the effectivites of the vaccine, as for a lower cases of fever process in vaccinated, as well as a lower consumption of theese in sanitary recours

doi:10.1016/j.ijid.2008.05.351

Among Dentistry Staff and Students of Universiti Kebangsaan Malaysia

H. Rashwan*, M.H. Jafar, H.M. Hussaini, I. Isahak, S.M. Young

Universiti Kebangsaan Malaysia (UKM), Kuala Lumpur, Malaysia

Influenza is a major health threat for patients and personnel in dental clinics.The objective of this study was to evaluate the level of knowledge, attitude and vaccination against influenza among dental health care workers (DHCW) and students. This survey was conducted in February and March 2005 on 348 DHCW and students from the Faculty of Dentistry, University Kebangsaan Malaysia (UKM). The knowledge level of influenza was low with an average score of 62.4%. The knowledge level was dependent of the education level and occupation of the respondents. Dental students had a significantly higher knowledge level than DHCW ($p < 0.05$). The average score of attitude towards influenza vaccination was 88.7%. The attitude level was dependent of the education level and occupation of the respondents. Dental students had a significantly higher attitude level than DHCW (p 0.05). Only 6.61% of respondents reported being vaccinated against influenza. Vaccination rate was higher ($p < 0.05$) among DHCW compared to students. In conclusion, more efforts should be made to improve the level of knowledge, attitude and vaccination status for influenza among DHCW and students.

doi:10.1016/j.ijid.2008.05.352

19.006

Assessment of a two-dose administration of oral poliovirus vaccine for virulent vaccine-derived polioviruses

H. Horie[1,*], M. Iwai[2], T. Nakayama[2], K. Matsuura[2], T. Takizawa[2], H. Yoshida[3]

[1] *Ohu University, Koriyama, Fukushima, Japan*
[2] *Toyama Institute of Health, Imizu, Toyama, Japan*
[3] *National Institute of Infectious Diseases, Tokyo, Japan*

Background: The oral poliovirus vaccine (OPV) is one of the safest vaccines, and is usually given to an individual in three or four subsequent doses. However, vaccine viruses often cause rapid reversion to the neurovirulent genotype during repeated replication in the alimentary tract. As long as OPV is in use, the virulent vaccine-derived poliovirus (VDPV) continues to be excreted with the feces to the environment, and the VDPVs have caused new epidemics of poliomyelitis in the world. We attempt to assess the efficacy of Japan's vaccination policy, a 2-dose administration of OPV, against virulent VDPVs.

Methods: VDPVs were isolated from the rivers and a sewage disposal plant in Toyama Prefecture, Japan. The neurovirulence of the VDPVs was analyzed by the MAPREC (mutant analysis by PCR and restriction enzyme cleavage) method, designed to estimate the ratio of revertants in a virus population. The neutralizing test of 191 individual

serum samples was performed according to the WHO standard method.

Results: 9 of 13 isolates in type 1, 23 of 25 isolates in type 2 and 16 of 29 isolates in type 3 were virulent VDPVs. Seropositivities against the virulent type 1 and 2 VDPVs were more than 90%, but the values against the virulent type 3 VDPVs were approximately 60%. Also, neutralizing antibody titers against the virulent type 3 VDPVs were the lowest in comparison with the titers against the virulent type 1 and 2 VDPVs.

Conclusion: Our results suggest that Japan's vaccination policy, a 2-dose administration of OPV, might be enough to prevent an epidemic of poliomyelitis caused by virulent type 1, 2 and 3 VDPVs, even though the seropositivity and antibody titers against type 3 viruses were the lowest. However, a booster dose of the vaccine for the type 3 virus is recommended.

doi:10.1016/j.ijid.2008.05.353

19.007

A Pilot Study for Evaluating a Nation-wide School-based Influenza Vaccination Program in Taiwan

J.H. Chuang[1], P.I. Lee[2], W.J. Su[1], M.T. Liu[1], Y.L. Liu[1,*], P.Y. Chen[3], Y.F. Huang[4], T.C. Chan[1]

[1] *Centers for Disease Control, Taipei, Taiwan*
[2] *National Taiwan University, Taipei, Taiwan*
[3] *Taichung Veterans General Hospital, Taichung, Taiwan*
[4] *Kaohsiung Veterans General Hospital, Kaohsiung, Taiwan*

Background: Epidemic influenza causes serious mortality and morbidity in temperate, subtropical, and tropical countries annually. Recent studies show that school-age children are the major spreaders of influenza transmission, and also strong evidences prove that vaccinating schoolchildren against influenza is the cost-effective way to reduce influenza-related morbidity among children and their households. Thus, Taiwan CDC has decided to provide the flu shots focusing on first and second grade students in the entire country since November 1, 2007. The aims of this pilot study were to assess the feasibility of a school-based influenza vaccination program and to evaluate the impacts on the households.

Methods: During fall 2007, we recruited 8 elementary schools from four counties/cities including 4 intervention schools assigned to vaccinate all students and 4 control schools only on first and second grade students. Written informed consent was obtained from the parents of the children who participated in this study. All households with children included in this study were surveyed by a weekly diary to record influenza-like illness (ILI). School nurses were trained to collect a small validation set of throat swabs from the children with acute ILI symptoms.

Results: There were 3,784 students (57% of the 6,671 students in 8 schools) participating in this study. The vaccine coverage for the intervention and control schools were 45% and 19% respectively. By February 1 2008, 96 throat swabs had been collected, and 6 of them were positive for influenza virus. Since the study is still ongoing, the weekly diary and throat swabs will be collected until the end of April, 2008. Further results for the impacts on the households will be analyzed and discussed later.

Conclusion: Lessons learned from this pilot study will provide further guidance for evaluating the school-based influenza vaccination study in 2008-2009 season.

doi:10.1016/j.ijid.2008.05.354

19.008

Frailty and Immune Response to Pneumococcal Vaccines Among the Elderly Hospitalised Patients

C.R. MacIntyre[1,*], P.B. McIntyre[2], I. Ridda[2], H. Wang[2], R.I. Lindley[3], G.L. Gilbert[3], J. Sullivan[4]

[1] *The University of New South Wales, Sydney, Australia*
[2] *National Centre for Immunisation Research, Sydney, Australia*
[3] *Westmead Hospital, Sydney, Australia*
[4] *Australian Red Cross Blood Service, Sydney, Australia*

Introduction: The elderly, despite being most at risk for invasive pneumococcal disease, respond poorly to polysaccharide vaccine. Conjugated vaccine technology overcomes this problem in children aged <2 years, but conjugated vaccines are not licensed for use in adults. Clinical predictors of response to vaccines other than chronological age may assist in targeting adults in most need of a more immunogenic vaccine. An index of frailty (FI) has gained support as a measurement tool, but has not been examined as a predictor of immune responsiveness.

Aims: To determine the response to 23 valent polysaccharide (PPV) and 7-valent conjugate (PCV7) pneumococcal vaccines in the elderly by level of frailty.

Methods: A randomized controlled clinical trial of hospitalized elderly was conducted. Subjects were randomised to receive PPV or PCV7; those who received PCV7 received PPV 6 months later. Serology was measured by enzyme immunoassay (ELISA) against four serotypes, 4, 6B, 18C and 19F.

Results: For all four sero types there were statistically significant increases in geometric mean concentrations after immunization; however there were no difference between 23PPV and PCV7. There association between frailty scores and geometric mean concentrations (GMC) varied by serotype. For serotype 4, there was a clear relationship between response and frailty - responses decreased with increasing frailty. This relationship was seen to a lesser degree for serotypes 18C and 19F. Type 6B is considered to be a poor immunogenic and there were very little change in both groups from baseline to 6 months.

Conclusions: We demonstrated the more frail patients had a poorer immune response to polysaccharide and conjugate pneumococcal vaccines, except for serotype 6B, where responses were poor in all groups. The use of a frailty index may be more suitable than age alone to determine people at risk of poor vaccine responses.

doi:10.1016/j.ijid.2008.05.355